CHAPTER 1

Patents: High Stakes, High Value, High Liability



After reading this chapter you will be able to

- Understand what a patent is, what types of patents there are, and how to protect them
- Learn how to file patent applications, including important new proposed 2003 Patent Office Rules
- Understand the value of patents to a corporation in terms of shareholder value, market positioning, and licensing revenues

merica has a rich history of patents. The U.S. patent system was created in 1790 by an act of President George Washington. His intention was to spur innovation and industrial development in a burgeoning country. Little did he know that he was building the foundation for America's future economic strength. America was destined to become the most dynamic, inventive country in the world. This very patent system, established more than two centuries ago, is the foundation of our country's dynamic prosperity leading into the twenty-first century.

Entire industries have been created based on the granting of patents. Edison, Westinghouse, Singer Sewing Machines, Levi Jeans, and General Electric are only a fraction of those companies that came into existence based on the security of patent protection. Even today, the Pullman brakes used in trains are the original units developed by

Westinghouse more than 100 years ago. Chances are that your company and its jobs can be directly linked back to the creation of new patented products.

Today, new products and new high-performance variations on old ones are being invented. Yesterday's high-volume generic product line has been splintered into many innovative niches. The best way to protect these niches is with patent protection.

Because of their importance to commerce, patents today have more respect than ever before. In the past 15 years, record judgments of \$100 million and more—a few approaching the \$1 billion mark (*Polaroid Corporation v. Eastman Kodak Company,* 16 USPQ2d 1481, 1483 (1990); Polaroid awarded damages of \$909,457,567.00)—have been awarded to patent holders as a result of patent infringement suits. In many emerging industries and technologies, patent values have soared 20- to 50-fold in just the past several years. Much of the fluctuation in share value of these companies is linked to the increase or decrease of these patent values.

Simply stated, developing and licensing new patented ideas can be a fast and economical way for companies to protect new product launches, gain new profits, and secure their future. If either you or your company are part of the patent revolution in America, this can be good news for you.

Patent ownership also brings along with it a corresponding liability. There is an old saying that rings true: "Nobody wants a worthless patent, but everyone wants a piece of a valuable patent." This means that valuable patents may be almost as much a liability as they are assets. If your company's patents have particularly high value, chances are they will ultimately wind up in the court system—either used offensively against alleged infringers or in a defensive campaign to prove their novelty and validity.

Patents have become the driving force behind the computer industry and the Internet. Patents protect America's technological revolution,

and they can secure our prosperity far into the future. In light of the now infamous Enron meltdown, heated global competition, and changes in world intellectual property policy, the changing business landscape is demanding an ever-higher level of responsibility by corporate managers in every functional department in the organization—a responsibility to manage, develop, and exploit patents to the maximum benefit of the shareholders.

Now it's time for you to learn about patents, the invention process, and how to contribute to Patent Quality Management (PQM). Corporate or outside legal or patent counsel will most likely handle patent legal work for your company, so use this book to familiarize yourself with the terminology, processes, and some of the intricacies of patents. Thus you will be able to more effectively contribute to your company's objectives of creating valuable patents to protect the sales of new product releases and new improvements.

What Is a Patent?

A patent is, in essence, a monopoly granted by the U.S. government to an inventor in exchange for full public disclosure of the invention. When a patent is granted to an inventor, it becomes a public document that fully discloses the details of the invention so that others skilled in the technology can duplicate the results achieved by the patented invention; however, the invention owner retains the sole right to exclude others from making, selling, using, or importing the invention. This concept was so important to America's founding fathers that they made a provision granting rights to inventors in the U.S. Constitution:

The Congress shall have Power . . . To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries. (United States Constitution: Article 1, Section 8)

Over the decades, the period for which the monopolistic right was granted to an inventor has varied. Today, it is for a period of 20 years from the date the application for patent is filed. At the end of the patent life, the patent owner loses the monopolistic right and the invention falls into the public domain for anyone to make, sell, or import.

Many requirements must be met in order for an engineering development or technical discovery to be considered patentable, but the most fundamental requirements are that the invention is (1) novel, (2) useful, and (3) not obvious to one skilled in the art.

This chapter provides a brief overview to the invention process, but we wish to emphasize the business of invention—that strategic thinking and tactical implementation used by a patent owner to properly exploit an invention for maximized profit and increased shareholder value.

Negative Rights

When a patent is granted by the U.S. government, it gives the inventor the right to exclude others from manufacturing, using, offering for sale, or importing the invention into the United States. In other words, patent ownership does not give the owner the right to make, use, sell, or import the invention, but instead gives the invention owner the right to *exclude* others from practicing these activities for the entire term of the patent.

Patents are sometimes referred to as a legal monopoly because they can be used to prevent others from practicing the invention.

Types of Patents, Duration

There are three basic types of patents:

1. *Utility patents* may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, system (or method of use), software and Internet methodologies, composition of matter, or any new, useful improvement thereof.

Utility patents are granted for the term, which begins on the date of the grant and ends 20 years from the date the patent application was first filed.

- **2.** *Design patents* may be granted to anyone who invents a new, original, ornamental design for an article of manufacture. Design patents are granted for a term of 14 years from the date of the grant.
- **3.** *Plant patents* may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant. Plant patents are granted for the term, which begins on the date of the grant and ends 20 years from the date the patent application was first filed.

Forms of Utility Patent Protection

Most people think of patents in terms of a product, but utility patent protection can take on many other forms. It is important that those individuals, especially those on the PQM team, who have had little previous contact with patents, know these various forms of protection. A heightened awareness to the various forms of patents can help team members identify patenting opportunities, as well as improve the company's ability to protect its product line against infringement.

The language we use to describe the various forms of patent protection is not based on statute, but are general terms used throughout the patent trade, whether that be an inventor, scientist, engineer, patent attorney, or patent examiner. Become familiar with these terms and you and your company's inventive potential will be substantially broadened.

Product Patents

These patents are usually easy to identify because they refer to the physical product itself. For instance, the lightbulb, the paper clip, and the mousetrap are all fairly famous patents. Product patents may also

encompass devices, apparatuses, or an entire group of associated products. When a specific unique, novel, useful element is used with a product, that too defines the product as unique and would be considered a product patent. The terms *device patent* or *apparatus patent* are also commonly used, but for ease of explanation, they are best grouped into the single category of *product patents*.

Method of Use or System Patents

These patents usually relate to making products people friendly. They should be of particular interest to every company that sells products in virtually every facet of business. Unfortunately, many companies and their engineers are not familiar with this form of patent protection even though they may be creating superior methodologies and products. Systems patents can also reduce handling time and improve productivity. When you think about productivity, keep in mind the classic economic principle of "productivity produces income." From this perspective, systems patents can be valuable assets to protect the sale of commercial products as well as consumer products. Simply put, systems patents refer to two methodologies:

- **1.** A method in which a product is used. For instance, scanning bar codes over laser reading devices. Or, self-opening plastic grocery sacks that automatically open on a dispensing rack when the previous bag is removed from the rack.
- **2.** A method related to employees' business operations. For example, a methodology in which machine operators employ computerized statistical process controls to the operation of a piece of equipment. Or, even a method of new employee training that maximizes the time investment.

Both applications save time. They can increase output, improve customer satisfaction, improve quality, increase profits, and so on. Developing superior systems can represent the central focus of a company's product line and result in an endless number of future opportunities as the com-

pany strives to make its product line 100 percent automatic and intuitively people friendly. From this perspective, systems patents can be the single most important asset a company owns.

We know that patents may not be obtained on commonly used products and components, but when they are used in a novel, useful, and unique method, patentability then becomes possible. One or all of the components may be prior art as long as the outcome of the combined use is novel and unique. Think in terms of efficiency, effectiveness, and convenience for the end user, and you're thinking in terms of systems patents.

If your PQM team starts thinking more in terms of systems patents, it will be improving the company's market position and giving the company a competitive edge. Ensuring that all departments understand the importance and the impact of developing and patenting systems, not only for the product line, but also internally within the department, should be a central focus of the PQM team in the twenty-first century.

Process Patents

Process patents generally refer to manufacturing processes. They would typically improve productivity, reduce defects, or offer some value-added quality. These patents are of primary importance to the manufacturing department as well as the engineering department. One of the best examples of a process patent would be U.S. Patent No. 135,245, patented by Louis Pasteur of France, in 1873. It revealed the fundamentals of the food sterilization process now known as pasteurization. It is easy to understand the economic impact of such an important process patent.

If the development of internal processes makes a product line so generic with such a narrow focus that it cannot be modified and improved, it will continue to lose market share to those product lines that are more adaptable to change and can satisfy emerging trends.

Process patents can also be a valuable tool to overcome another emerging danger. At times, companies maintain certain manufacturing processes as closely guarded trade secrets; however, if an outside entity files a patent application that covers that trade secret, the company can lose the rights to the trade secret. In other words, the company holding the trade secret would be forced to license its own manufacturing process from the new patent holder, regardless of how long the process had been in prior use. There have been several court case precedents of this kind of action. The negative impact such a scenario could have on the corporation, its management, and the shareholders could be disastrous. The best way to keep this from happening is by filing process patents on your trade secrets before others do. Then you will be in the enviable position of licensing out to them instead.

A shift in focus to being a more customer-driven, innovationoriented corporation must be accompanied by cost-effective manufacturing processes.

Improvement Patents

The term *improvement patent* may refer to any number of new incremental improvements made to an existing product, system, or process. This can be something as simple as a new tread design for a tire that displaces more water than existing designs or as sophisticated as a method to improve the optical magnification or resolution of the Hubbell Space Telescope.

Improvement patents can also be systems patents, just like the selfopening grocery sack of the late 1980s was an improvement over the prior art "T-shirt bag" invented in 1966. Improvement patents can also be called product patents, if the improvement creates a new, improved product that replaces a prior art product. In a way, it really does not matter how you categorize an improvement patent; what is important is whether your PQM Team takes action when these opportunities

arise and you protect these company and shareholder assets with patents.

A customer-oriented company should always be striving to innovate based on customer needs. With total quality management (TQM), making incremental improvements in manufacturing processes of existing products leads to higher quality and improved output. With superior quality, incremental changes in existing processes, systems, and products can then be made to advance the company's profitability as it strives to improve output, sales (via customer satisfaction), and quality. It is simply not acceptable to be complacent with a present market position. If you don't improve your products and processes, your competitors will. If you don't protect them, your competitors will patent them out from underneath you. Ask yourself: Who will be paying royalties to whom in order to stay in business?

Machine Patents

When several elements are used in combination that have some sort of productive output, it is referred to as a *machine patent*. An example is the machine that rolls dough over a mandrel to form a bagel with a round



IN THE REAL WORLD

The Right Improvement Can Be the Breakthrough

A well-known fact understood by experienced inventors and product developers is that most breakthrough opportunities are the result of a subsequent improvement patent on an existing product. A new product launch protected by a product patent might get sales started, but a subsequent improvement patent usually creates the breakthrough opportunity—and makes sales soar!

hole in the middle. Or, any number of high-speed bottling machines used in the beverage industry.

Machine patents are usually generated by companies that are in the machinery manufacturing business. These patents often have accompanying process patents. It is also common to include several of the individual inventive aspects of the machinery as part of the overall patented machine. Some people refer to machine patents as *apparatus patents*, thus further blurring the terminology used in the field.

Composition of Matter

Chemical composition patents are scientific by nature, such as those granted for various types of plastics. A burgeoning field of new compositions is in the field of genetic and biological engineering. Composition of matter is sometimes referred to as chemical compositions.

If you are developing new patented compositions, you are probably a scientist working for any number of chemical- or medical-oriented companies or a major university.

Software Patents

This type of patent is more of a catchall term referring to any number of computer- or Internet-related patents. It can include software itself, computer applications such as the one-touch screen, and Internet applications and methods, such as those used for secure credit card transactions.

One of the more famous software patents is the one invented by Xerox that was used by Apple to create its mouse applications. It could be considered an improvement patent as well and was instrumental in turning the PC into a multibillion-dollar breakthrough opportunity. Today, the mouse is one of the standard input devices for all desktop PCs.

One area of concern to companies is software that is developed and used internally for business operations. If the company does not research

the concept to verify that it is not subject to an existing patent, the company may be infringing. Or, if the company does not pursue patenting the subject matter—maintaining it either as an internal trade secret or just neglecting to consider patenting—the concept may be subject to someone else's subsequent patent.

Patent Monopoly versus Antitrust

Patent laws were established to grant monopolistic rights to the patent owner. Once a patent issues, the patent owner can prevent others from selling, making, importing, or using a product that infringes that patent.

Conversely, antitrust laws were established to prevent one company from unfairly monopolizing a particular market or industry segment. Antitrust laws conflict in some cases with patent laws. With the growing number of antitrust claims being levied against patent owners (for their electing to "unfairly" shut down infringers rather than license the patent rights to them), this dilemma is becoming a hotly contested issue in the Federal Trade Commission and the U.S. Department of Commerce.

In the past, patent owners have sought to find companies that infringed their invention. After some posturing and negotiation, the result of the skirmish was that the infringing company would usually execute a license to the patent and pay the patent owner an agreed-to royalty against manufacturers' sales. Times are changing. With the recent case of *CSU* v. *Xerox*, it has become clear that a company's assertion of its patent rights, and its refusal to license its patents or technology, does not constitute antitrust.

Nevertheless, the debate continues, and by mid-2002 the Federal Trade Commission (FTC) and the Department of Justice Antitrust Division cosponsored hearings, called "Competition and Intellectual Property Law and Policy in the Knowledge-Based Economy." These hearings included debates ranging from "Patents Should Not Be a

Defense to Antitrust," to "The Monopolistic Right of Patent Owners Is Absolute, and the U.S. Constitution Lays the Groundwork for Patent Owners to Exploit Their Rights," to "The Monopolistic Advantage against Competitors."

So while patents confer monopolistic rights on the patent owner, it is important for key managers and intellectual property counsel to keep an eye on new legislation being developed in the patents versus antitrust arena.

What Is Required for the Granting of a Patent?

In order for the U.S. government to grant a patent, patent laws say that the subject matter must be (1) novel, (2) useful, and (3) not obvious to one skilled in the art.

In retrospect, it's rather easy to identify the usefulness of many inventions: The cost of a pair of Levi's jeans would be outrageous had it not been for Whitney's cotton gin. We take for granted many of the useful features of inventions, such as the improved lightbulb, Velcro, and ZipLoc bags—all of which have proven their usefulness. Products or processes in patent applications that are not provably useful are rejected by the Patent Office. For instance, perpetual motion machines have not been proven to the Patent Office to work and are therefore not patentable.

A patented invention must be *operative*. This means it must work according to the claims in the application. For instance, square tires would be considered neither useful nor operative. A patent on a process whose claims are based on improved output, but that does not perform as indicated, is not valid.

The invention must be *new* or *novel*. An invention cannot be patented if:

• It was previously known or patented in any part of the world at any given time.

- It was previously described in an article and published anywhere in the world.
- The difference between your invention and a previous patent (or publicly known product, process, etc.) is such that it would have been obvious to any person skilled in the art. For instance, simply changing size or color for the sake of making your invention different would probably not be patentable.
- It was offered for sale or put into use more than one year prior to filing for a U.S. patent.



TIPS & TECHNIQUES

Think Ahead to First-to-File

The United States is currently the only country in the world using a first-to-invent system. Consequently, there is much international political and legal pressure being put on the United States to convert to a first-to-file patent system. This means that the date and time stamped on the patent application will determine the winner of the footrace to the patent office, and consequently, the rightful inventor.

It is interesting to note that the United States did not always have a first-to-invent patent system. In fact, Alexander Graham Bell is said to have beaten Elisha Gray to the patent office by a mere matter of hours, touching off one of the hottest patent contests of all time, sometimes referred to as the Telephone Patent Conspiracy of 1876.

Now, the United States may be on the verge of returning to a first-to-file patent system. Because this change would considerably alter patent strategy as we now know it, it is important for the reader to remain abreast of any changes to the patent system by occasionally reviewing the U.S. Patent and Trademark Office at www.uspto.gov, clicking on "News and Notices."

In this last scenario, the United States (Canada and Mexico, too) has what is referred to as the one-year rule, or the one-year-on-sale bar. It means that the first, true inventor may file a patent application up to one year after the first public disclosure or first public offering of the invention or product for sale.

First to Invent

The United States is the only country in the world that recognizes the rightful inventor to be the one who is first to invent rather than the inventor who is the first to file a patent application. This means that only the first, true inventor will be acknowledged as the patent grantee. Any invention or discovery an inventor is working on that has not been abandoned has precedence over subsequent discoveries that are the same or similar in scope.

If two persons are granted patents on the same subject matter, the inventor who can prove his or her discovery has precedence over the other will have the valid patent. This is true regardless of who filed first or which patent was granted first.

Proof of Inventorship

Three criteria are used to verify legal inventorship:

- **1.** The *date of original conception* may be established by executing an invention disclosure that clearly reveals the inventive matter. This is usually accomplished with drawings depicting the subject matter and adequate specifications explaining how the invention works. Once completed, the disclosure should be signed by a qualified party who can verify the content and the date signed. This would not be a spouse or business partner but a third party who has nothing to gain from the invention's development. Inventor Journals, sometimes called Scientific Journals, are commonly used to establish the date of original conception.
- **2.** Next, the invention must be *reduced to practice*. In other words, it must be shown to work the way you say it works. This is usually



IN THE REAL WORLD

The First-to-File Holds the Senior Position

In the real world it is usually important to file a patent application as soon as possible after conception and reduction to practice in order to protect your rights and the first-to-invent status. The inventor who files first is considered to be in the "senior position" and is more likely to be proven to be the one with the valid patent. The burden of proof is on the inventor who files second, considered the "junior position." It is an uncommon occurrence referred to as *interference*, but the junior position tends to be the more costly position to defend.

accomplished by providing a sufficient explanation in a journal, by producing computer-assisted drafting (CAD) drawings, or by building a functional prototype. If none of these steps is done or documented, then the filing of the patent application is considered the date of reduction to practice.

3. An invention must not have been *abandoned* during its development. If so, it could void the date of original conception and/or the date of reduction to practice. In other words, an inventor must use *diligence* when developing new concepts and inventions.

Filing Patent Applications

Your corporate counsel or patent attorney will be filing most of your patent applications, so this section is more informative than instructive. Several legal and business strategies are involved with the timing and completeness of a patent application, so it is important for all members of the PQM Team to discuss and agree on each new application filed.

U.S. patent applications are applied for in writing to the Commissioner of Patents and Trademarks using one of two types of applications: a provisional patent application or the permanent, nonprovisional patent application. Once either application is received by the U.S. Patent Office, the words *patent pending* or *patent applied for* may be marked on products, brochures, and so on. To use these terms falsely may subject the inventor or individual claiming a pending patent to a substantial fine.

The most commonly used method today to establish that a patent application has been received by the U.S. Patent Office is to send it via Express Mail. The U.S. Postal Service is a U.S. government agency, which effectively acts as a receiving agent for the U.S. Patent Office. Once a patent application is mailed in person using Express Mail Service, it is legally considered received by the Patent Office on the date it was deposited, and the patent-pending notice may be applied.

Nonprovisional Patent Applications

The permanent, nonprovisional application begins the examination process that may lead to the granting of a patent. Some refer to the non-provisional patent application as a regular patent application. It must at a minimum include the following:

- *Complete specifications*, which is considered a satisfactory description, or explanation, of the invention and at least one claim.
- *Drawings* as required to sufficiently illustrate how the invention works. Photographs are rarely used other than with plant patent applications.
- An *Inventors' Declaration* stating that he or she is the first and sole inventor. If more than one inventor was involved in the creation of the present invention, then all of them will need to execute a declaration.
- The appropriate filing fee



PROPOSED 2003 PATENT OFFICE RULES

Four Step Patent Application Process

The originally proposed 21st Century Strategic Plan put forth a patent process that required four separate steps, outlined here. Although this legislation is not going forward in its proposed form, we've addressed this significant change here in the event a modified program goes forward—it will be important to prepare and change internal processes quickly to take early competitive advantage of these changes.

- ① Obtain an outside (third party) patent prior art search from an approved search authority,
- 2 Make a patent application, and include a filing fee. Thereafter, and within 18 months:
- 3 File a separate request and include a separate fee for patent examination, and
- During the 12 months after patent issuance and payment of the issuance fee, the patent will be subject to third party objections (similar to the current reexamination request), allowing parties to challenge the validity of your patent.

Provisional Patent Applications

A provisional patent application, or PPA, is a simplified version of the permanent nonprovisional patent application. Although the name may imply that this is an application for a provisional patent, in fact, the provisional patent application is more accurately described as a provisional application for a patent. The PPA will never turn or mature into a regular patent. The PPA establishes a filing date but does not begin the examination process. It is held by the Patent Office for one year. If it is

not followed up with a corresponding permanent nonprovisional application, it is discarded.

The use of provisional applications is becoming more popular because it preserves international filing rights if filed before a first public disclosure. The PPA has some additional strategic and tactical uses, which we will cover in more depth in later chapters. Provisional patent applications must include the following:

- A *cover sheet* identifying the application as a provisional application, the name of the inventor, and other bibliographic data
- At least a partial *specification* that satisfactorily describes the inventive matter, but without the legal claims
- Drawings if necessary (they almost always are).
- The required filing fee

Who Can File and Who Owns the Patent?

Only the true inventor can own, sell, or assign his or her interest in a patent application or patent. Any individual, firm, corporation, or partnership can own it. An inventor automatically owns his or her patent when granted, unless it is assigned to another entity. The transfer of an inventor's rights is by way of a patent assignment. The assignment of a patent (or application) may be recorded at the U.S. Patent Office, although this is not a legal requirement.

When you work for a company and invent something related to your company's business, on company time and for its use, you cannot ask for compensation for two reasons: (1) your continued employment is considered fair compensation for the invention, and (2) the discovery probably occurred in the job environment and would not have been made otherwise.

If an invention was conceived before joining a company, and it is being pursued and patented for the company's use, asking for compensation from

the new employer is a valid request; however, it would be wise to agree upon the compensation before beginning employment and not afterward.

Federal laws state that if you are employed by a firm and receive a patent on an unrelated idea in another field, and development was not on company time or at company expense, your employer cannot claim any rights.

Patents in the Corporation

New ideas usually start out as a conceptual seed from a single person or a small group of individuals, but because patents affect every department in the corporation, sooner or later other managers in the organization will play major roles in the development and commercialization of the patent. One of the foremost opportunities within a corporate structure is the ability to quickly build teams and take on new projects. Fortunately most modern TQM structures can adapt to a team development effort, especially from a top-down directive. The right team can dramatically speed up the time-to-market effort.



IN THE REAL WORLD

Patent Rights Challenged by Antitrust

In 1994 CSU, LLC, a Xerox machine repair service company, filed suit, alleging that Xerox violated the Sherman Antitrust Act, 15 U.S.C. § 2, by monopolizing and attempting to monopolize the market for servicing Xerox copiers and printers. Xerox answered the complaint with counterclaims of their own for patent infringement. The district court threw out CSU's antitrust claims, saying that "Xerox's unilateral refusal to sell or license its patented parts cannot constitute unlawful exclusionary conduct under the antitrust laws."

Corporate structure can be a downfall of some corporations as well. The wrong management style (e.g., autocratic or micromanaged) will have a difficult time fostering a true team effort. If everything hinges on the approval of a single person, it will be slow going.

Of course, patents are considered intangible assets, and under the new Financial Accounting Standards Board (FASB), increased emphasis is being put on financial reporting and patent value as a reportable intangible corporate asset. We cover the financial reporting and valuation aspects of patents in more detail in Chapter 8.

Patents across the Corporate Structure

Patents increasingly contribute to the creation and enhancement of shareholder value, help establish competitive market positioning, and are becoming an important source of licensing revenues. It is no wonder then that managers throughout the organization will increasingly come in contact with patents and will be increasingly required to make management decisions related to patents.

From this position of having provided you with a basic understanding of what patents are, and how they work, *Essentials of Patents* will now lay out the essentials of the business of patents. Patent value doesn't just happen. It is planned (or at least it should be). Patent strategy, patent tactics, and patent management throughout the organization are critical factors in achieving Patent Quality Management.

Patents are powerful tools based on the right to exclude others from manufacturing, using, and selling products that fall under the scope of your patents. Thus patents can be the basis to protect your company's sales and assets. This basis also represents a popular means of generating additional revenue—more specifically, through licensing out your company's patents and licensing in others that may expand your company's sales.